

Henna tattooing dermatitis: consider an additive as the culprit

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INTRODUCTION

The use of henna tattooing has become popular beyond its traditional boundaries. Many of the reported cases of henna tattooing dermatitis involve European tourists who visited the Middle-East or people with fair skin who had paint-on tattoos done by street or beach artists.

Henna is made of the ground leaves of *Lawsonia unermis* or *alba* (family *Lythraceae*), mixed with water or oil. The active ingredient is lawsone, a naphthoquinone. It takes a few hours from the time that the henna is applied to the skin until the brownish-red colour is well established. Various substances, such as lemon oil, vinegar, eucalyptus oil and coffee, are added to obtain different colouring effects.¹ Para-phenylenediamine (PPD), which is commercially used in hair colouring, is commonly added to henna preparations to obtain a darker shade — 'black henna' and to shorten the fixation time of the colour to the skin.² Allergic skin reaction to the natural henna is rare, however, severe allergic skin reaction is commonly described in cases where henna is mixed with PPD.¹⁻⁵

CASE HISTORY

A 6-year-old boy was checked in the clinic due to a pruritic rash on his right arm. His past medical history was clear. He did not have any chronic medical condition and no known allergies. Five days before the encounter, a henna tattoo was applied on his right arm during a visit to an

amusement park. The area was exposed to sunlight. One day later the area was red, swollen and itchy. The mother recalled that 1 year before the boy had had a similar reaction to henna tattooing.

On physical examination, the area of the tattoo was red and swollen. Mini-vesicles were noted, without weeping (Figure 1). One mildly swollen and tender lymph node was palpable in the right armpit. The boy was treated with loratadine. The itching and swelling subsided gradually over the following 5 days, while the inflamed area was hypo-pigmented for many months following.

DISCUSSION

Application of henna to the skin in order to achieve temporary tattooing is common practice in the Middle East and India. Traditionally, it is used by Muslims, Hindus and Jews as a decorative dye at weddings and other social events. Additional uses of henna include hair colouring and nail strengthening. Henna is also used in traditional medicine to treat alopecia, burns, headaches, gastrointestinal symptoms,³ and as an antimycotic, tuberculostatic and as ultraviolet-A blocker.²

Henna has the advantage of easy, quick and painless application as well as being temporary. Application of henna does not involve special tools and the risk of introducing infective agents to intact skin is null. However, henna tattooing is not completely safe. In children with glucose-6-phosphate dehydrogenase deficiency, life threatening hemolysis has been reported.⁶ Certain additives to henna preparations may cause an allergic adverse skin reaction. The most notorious agent is PPD. The classic reaction to PPD is consistent with Type IV delayed-type hypersensitivity reaction, however, an acute life-threatening Type I reaction has also been described.⁴

In most reported cases of the delayed type, henna was applied twice and it took a couple of days between the application and the development of a skin rash. In some reports the adverse skin reaction developed some weeks following the application.¹ Patch tests to PPD were strongly positive.^{1,2,4,5} PPD cross-reacts with related

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Figure 1. Skin reaction on arm due to henna tattoo.

compounds as sulfonamides, para-amino benzoic acid, sulfonureas, dapson, azo dyes, benzocaine and para-aminosalicylic acid. Therefore, people who are allergic to these substances may adversely react to PPD.⁷

The clinical presentations of allergic reaction to henna include erythema, swelling, blisters, weepy dermatitis, eczematous dermatitis, erythema multiform, lichenoid dermatitis, pruritic dermatitis and papular dermatitis. Although localised hypopigmentation is the most common consequence of the reaction, hyper-pigmentation was also described.² The usual treatments for allergic contact dermatitis include application of topical corticosteroids and a short course of systemic antihistamines.^{1,2,4,5,7}

Herbal psoralens (furocoumarins) applied to the skin may cause severe phytophotodermatitis when exposed to direct sunlight, which transforms the psoralens to quinones. Plants that are usually mentioned in this context are fig, celery, lime, lemon, parsley, carrot and dill belonging to the species *Umbelliferae*, *Moraceae*, *Leguminosae*, or *Rutaceae*.⁸ As some 'secret' ingredients of henna may include one of these substances and as henna tattooing is usually done on skin exposed to the sun, it is possible that some cases of henna dermatitis are in fact cases of phytophotodermatitis.

UV radiation-induced chemical changes, provoking an allergic skin reaction, can result not only from topical application to the skin. Systemic medications such as diuretics (hydrochlorothiazide, furosamide), antibiotics (tetracyclines, fluorquinolones, sulfonamides),

chlorpromazine and nonsteroidal anti-inflammatory drugs may induce similar reaction.⁹ However, in this case, skin reaction will involve all sun exposed areas.

It is recommended that black henna should be avoided, especially in people who have had previous adverse reactions to henna, to certain medications or to hair dyes. Applying natural red-brown henna, without additives, and avoiding exposure of the tattoo to direct sunlight is usually safe, except in people with glucose-6-phosphate dehydrogenase deficiency. In a case of henna tattooing dermatitis, reaction to henna additives should always be considered.

Consent

Consent was not required as the patient cannot be identified

Competing interests

The author has stated that there are none

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